ACC.13
62nd Annual Scientific Session & Expo
TCT@ACC-i2

E387
JACC March 12, 2013
Volume 61, Issue 10

Arrhythmias

STRUCTURAL AND MOLECULAR PATHOLOGY OF THE ATRIUM IN A CANINE MODEL OF ARRHYTHMOGENIC CARDIOMYOPATHY

Poster Contributions
Poster Sessions, Expo North
Sunday, March 10, 2013, 3:45 p.m.-4:30 p.m.

Session Title: Arrhythmias: Atrial Physiology and Ablation of Atrial Arrhythmias
Abstract Category: 6. Arrhythmias: Other
Presentation Number: 1238-57

Authors: *Jorge Vila, Romain Pariaut, Sydney Moise, Eva M. Oxford, Philip Fox, Caryn Reynolds, Carley Saelinger, Dept. of Veterinary Clinical Sciences, School of Veterinary Medicine, Louisiana State University, Baton Rouge, LA, USA*

Background: Arrhythmogenic cardiomyopathy (AC) is characterized by fatty or fibro-fatty myocardial replacement, predominantly in the right ventricle and to a lower extent the left ventricle. It is recognized as a disease affecting the cardiac intercalated disc. A spontaneous animal model of AC has been described in boxer dogs. Clinically, it is associated with ventricular arrhythmias, although atrial arrhythmias and atrial histopathological changes characteristic of AC have occasionally been reported. However, the full extent of atrial involvement in this canine model has not been investigated. We applied molecular techniques to characterize the distribution of desmosomal and gap junction proteins in the atria of dogs with AC. We hypothesized that histological changes consistent with AC and alterations to the intercalated disc proteins are present at the atrial level in canine AC.

Methods: Hearts from 14 controls and 13 dogs with confirmed AC were studied. Right and left atrial sections from 11 AC dogs were examined by immunofluorescence. Samples from 10 AC dogs were used for western blot analysis. The intercalated disc proteins investigated were connexin 43 (Cx43), connexin 45, connexin 40, plakoglobin, plakophilin-2, desmoplakin, and cadherin. Transmission electron microscopy was performed on the atrial sections of 2 AC dogs and 2 controls.

Results: Western blot band density indicated a significant decrease of Cx43 in the right atrium of AC dogs compared to controls. There was no difference between controls and AC dogs for the other proteins investigated. Immunofluorescence analysis showed that the number of Cx43 signals and the signal intensity for plakoglobin was decreased in the left and right atrium of AC dogs.

Conclusion: Our results indicate the alteration of intercalated disc proteins in the atrial myocardium of AC dogs, showing atrial involvement in addition to the ventricles. These findings support the use of the broader term of AC rather than arrhythmogenic right ventricular cardiomyopathy to describe this disease. The decrease in the amount of Cx43 in conjunction with the histological changes could represent the substrate for the atrial arrhythmias associated with canine AC.